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DESY
Magnet Division Procedure

Proc. No.: DESY-MAG-R-4008

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Title: DESY GO Combined Element Magnet Assembly

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- ES&H Review: Signature on File

REVISION RECORD

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A	4/17/00		Initial Release	

1. Scope:
This MAP describes the procedure used to produce DESY GO Combined Element Magnets

2. Applicable Documents:

RHIC-MAG-Q-1000	Control of Measurement Test Equipment
RHIC-MAG-Q-1004	Discrepancy Reporting Procedure
DESY-MAG-R-4010	Pressure Leak Check

3. Requirements:

All welding must be performed by welders qualified I.A.W. with Section IX Division I of the ASME Boiler & Pressure Vessel Code.

3.1 Material/Equipment

None

3.2 Safety Precautions

3.2.1 Operators shall wear safety glasses with side shields, or goggles.

3.2.2 Operators shall be trained by their cognizant technical supervisor and qualified in the operation of the required welding equipment.

3.2.3 No welding shall take place unless all welding screens are in place around the welding station, and all personnel not directly involved with the welding process are outside the screens. Any personnel inside the screens shall wear protective gear to prevent eye injury, and shall be clothed to prevent burns caused by intense ultra-violet light. Prior to welding, combustible materials should be removed from the area as much as practical.

3.2.4 All lifting and handling operation requiring overhead crane operations shall be performed by holders of valid Safety Awareness Certificates and trained in the use of the lifting device by the Cognizant Engineer or Technical Supervisor.

3.2.5 All relief devices and gauges used for pressure tests shall meet the requirements of ES&H Standard 1.4.1.

3.3 Procedure

3.3.1 Grease and install O-rings 15010142 & 15010143 into grooves of end volume housing 15010020.

3.3.2 Slide end volume onto cryostat. Check that it is oriented correctly.

3.3.3 Grease and install O-ring AS568A-260-70EP into end plate 15010022.

3.3.4 Install end plate and clamp assembly on cryostat assembly. Be sure to use (4) hollowed bolts attaching clamp assembly to cryostat.

3.3.5 Install axial restraint 15010086 and compression plates 15010126 & 15010127 onto cryostat and end plate (include bushings 15010128 on cryostat end of restraint). Use (4) DIN7984A4M10X30 screws on cryostat end and (5) DIN912A4M8X30 screws to end plate. Position of the containment with respect to cryostat vessel may have to be adjusted slightly for proper fit of axial restraint.

Caution:

Do not use axial restraint to position He containment

3.3.6 Install wiring box support 15010063 and flexible support 15010079 onto end of cold mass assembly using (4) DIN912A4M6X20 screws & (2) DIN912A4M8X30 screws. Trim super insulation from under wiring box support.

3.3.7 Install long support posts 15010058 to end plate using DIN912A4M6X25.

3.3.8 Route leads through and install 4K internal pipe 15010075 onto end of 4K outlet pipe using (6) DIN912A4M4X16 screws and 15010098 split receiver.

3.3.9 Splice trim bus harness and voltage taps onto end of leads about 6 inches from end of internal pipe.

3.3.10 Install 40K return line 15010076 and 4K supply line 15010078 onto their respective flanges using (12) DIN912A4M4X16 screws and 15010098 split receivers.

Note

Since lines are only connected on one side they will not stay in their final position. Position them roughly and temporarily restrain.

3.3.11 Install wiring box onto flexible support using (4) DIN912A4M6X10 screws.

3.3.12 Assemble 4 each upper and lower connector blocks 15010256 & 15010252 to upper terminal board 15010249. Install with cap screws DIN912A4M3X20.

3.3.13 Locate upper and lower terminal board assemblies 15010249 & 15010251 to wiring box weldment. Install with cap screws DIN912A4M5X16 and washers DIN125A4M5.

3.3.14 Install 4K flex hose 15010072 over lead and onto 4K internal pipe and wiring box using (12) DIN912A4M6X25 screws.

3.3.15 Coil up leads into wiring box and temporarily install wiring box cover 15010062 using DIN912A4M8X45 screws. Bag and tag unused screws and attach to assembly for later installation.

3.3.16 Install 40K supply line 15010077 onto remaining cryostat flange using (6) DIN912A4M4X16 and 15010098 split receiver.

3.3.17 Install pressure relief seal plate 15010108 and greased O-ring AS568A-229-70EP to front plate 15010021 with (4) 15010109 shoulder screws & (4) 15010141 relief valve springs.

3.3.18 Install short support posts 15010059.

3.3.19 Locate front plate into position by engaging short support posts into long support posts. Make note of plate orientation.

3.3.20 Install safety screws into support posts. Do not tighten screws. Short post should still slide inside long post.

3.3.21 Install end flange 15010050 along with greased O-rings AS568A-240-70EP, AS568A-251-70EP, AS568A-259-70EP onto end of beam tube and front plate.

3.3.22 *Perform this operation only if magnet is designated for ZEUS as a spare*. Install V-slide 15010130 onto front plate.

3.3.23 Slide end volume housing into position and bolt to end plate and front plate. Be sure that flanges are properly seated and that support posts are not holding them apart.

3.3.24 Perform Pressure Leak Check on assembly per DESY-MAG-R-4010.

Pressure Check:
353 PSIG for 4K Circuit
310 PSIG for 40K Circuit

Leak Check:
280 PSIG for 4K and 40K Circuit

Max Leak Rate 3.6×10^{-9} Std cc He /Sec

3.3.25 Deleted Operation

3.3.26 Position cryostat end cone into position on IP end of cryostat. Make sure survey notches are aligned with leak check notches.

3.3.27 Weld end cone.

4 Quality Assurance Provisions:

4.1 The Quality Assurance provisions of this procedure require that the technician shall be responsible for performing all assembly operations in compliance with the procedural instructions contained herein and the recording of the results on the production traveler.

4.2 The technician is responsible for notifying the technical supervisor and/or the cognizant engineer of any discrepancies occurring during the performance of this procedure. All discrepancies shall be identified and reported in accordance with RHIC- MAG-Q-1004.

4.3 Measuring and test equipment used for this procedure shall contain a valid calibration label in accordance with RHIC-MAG-Q-1000.

5 Preparation for Delivery:

5.1 N/A